Walleye Management Strategy Summary for Little Bay de Noc, Lake Michigan

Michigan DNR Fisheries Division
Marquette Fisheries Research Station and Northern Lake Michigan Management Unit
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Given the changing environment of Lake Michigan and the desire to make wise use of stocked walleyes, the Michigan Department of Natural Resources Fisheries Division proposes using several criteria to guide stocking decisions for northern Green Bay waters managed for walleye.

The criteria were initially discussed at a May 2011 meeting with stakeholder groups, and fine-tuned over the course of five meetings of the group during 2011. These guidelines are adapted from decision criteria used for walleye management in Saginaw Bay (Fielder and Baker 2004[1]). Our work also parallels the "red flags analysis" approach used to guide stocking decisions for another top predator in Lake Michigan, Chinook salmon (Claramunt et al. 2008[2]). The red flags analysis uses a suite of biological indicators to assess salmon health, evaluate the balance between predator and prey fishes, and guide management decisions and then compares the value of each indicator to the typical range of variation of that indicator over the period of data collection (i.e., the 80th and 20th percentiles). In addition to these two approaches, the group also used reviewed available information and shared personal knowledge of the bays de Noc.

In developing the proposed walleye stocking strategy, the group considered: 1) the historical background of walleye stocks and fisheries in the Michigan waters of Green Bay; 2) recent changes in habitat conditions pertinent to walleye management; and 3) Fisheries Division's current understanding of reproduction of Green Bay walleye stocks. This information provided the basis for the draft walleye management objectives for northern Green Bay and bays de Noc, and development of decision criteria specific to walleye management in Little Bay de Noc.

Walleye stocking decisions for Little Bay de Noc should be guided by evaluation of multiple criteria documenting the status of the walleye population and its forage base. The proposed criteria describe:

- Trends in the walleye population abundance;
- The amount and sources of walleye reproduction;
- Predator-prey balance (prey fish abundance and walleye growth).

To reflect the changing nature of the bays de Noc environment and fish community, we propose using percentiles from the previous 15 years as benchmarks for comparison with the most recent data. Thus, the benchmarks will adjust over time as the suitability of the environment for walleyes and their forage changes. A red flag is triggered for a variable when values for 3 of the last 5 years fall outside the 60th and 40th percentiles, and when the most recent value for a variable falls outside of the 80th and 20th percentiles. We used the 30th rather than the 20th on adult walleye abundance metrics as a proactive measure to trigger stocking sooner in the event of unexplained declines in the adult walleye population. The findings from all metrics are summarized to provide an overall direction in fish stocking (i.e., increase or decrease) relative to stocking levels used in recent years. For more information, including a summary of the current findings for each of the proposed decision criteria, we encourage you to review the full stocking strategy document.

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[1] Fielder, D. G., and J. P. Baker. 2004. Strategy and options for completing the recovery of walleye in Saginaw Bay, Lake Huron. Michigan Department of Natural Resources, Fisheries Division, Special Report 29. Ann Arbor.

[2] Claramunt, R. M., D. F. Clapp, B. Breidert, R. F. Elliott, C. P. Madenjian, D. M. Warner, P. Peeters, S. R. Robillard, and G. Wright. 2008. Status of chinook salmon in 2005. *Edited by* D. F. Clapp and W. Horns. Great Lakes Fishery Commission Special Publication 08-02. Pages 71-80.